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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/642,649	08/19/2003	Peter Deane	PAT 2139-2-US	3737
26123 7590 04/29/2009 BORDEN LADNER GERVAIS LLP Anne Kinsman WORLD EXCHANGE PLAZA 100 QUEEN STREET SUITE 1100 OTTAWA, ON K1P 1J9 CANADA			EXAMINER TSEGAYE, SABA	
			ART UNIT 2419	PAPER NUMBER
			NOTIFICATION DATE 04/29/2009	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ipinfo@blgcanada.com  
aarmstrongbaker@blgcanada.com  
akinsman@blgcanada.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/642,649	<b>Applicant(s)</b> DEANE ET AL.	
	<b>Examiner</b> SABA TSEGAYE	<b>Art Unit</b> 2419	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 February 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

***Response to Amendment***

1. This Office Action is in response to the amendment files 02/18/09. Claims 1-19 are pending. Currently no claims are in condition for allowance.

***Claim Rejections - 35 USC § 103***

2. Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scott (US 6,522,642 B1) in view of Upton et al. (US 6,396,801).

Regarding claims 1-4 and 12, Scott discloses, in figs. 2 and 4, an apparatus for processing N number of input signals having a common frequency, said apparatus comprising:

at least N-1 number of serrodyne (also known **single sideband generator**) modulators (column 4, lines 12-13; 17-25) for modulating N-1 of said N number of input signals into N-1 number of modulated signals (column 3, lines 34-47);

a combiner for combining said modulated signals along with one non-modulated signal into an aggregate signal (column 4, lines 32-35);

N-1 number of demodulators for demodulating said aggregate signal, each said demodulator corresponding to one of said modulators (column 6, lines 1-6; column 13, lines 16-25); and

N number of duplexer filters each corresponding to one of said N number of input signals (column 4, line 65-column 15, line11);

wherein said demodulators, and said duplexer filters, are arranged so as to pass N number of demodulated portions of said aggregate signal to a corresponding output and each of said demodulated portions being substantially identical to one of said N number of input signals

Art Unit: 2419

(column 4, line 65-column 15, line 11). Scott, further, discloses that the combined signal output from the summer 151 is transmitted along the backhaul cable 152. The backhaul signal may be made suitable for transmission over a coaxial cable, fiber optic cable, or other type of transmission media using techniques known in the art (column 4, lines 33-43).

Scott does not disclose number of circulators for receiving at least part of aggregate signal and single Radio Frequency output.

Upton, in Figs. 7-9, teaches number of circulators for receiving at least part of aggregate signal (column 10, lines 44-62).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to add a plurality of circulators, such as suggested by Upton, to the system of Scott in order to provide a more efficient and increased performance communication system (see summary).

Upton, further, teaches that waveform 206 may be transmitted as either an optical or an RF waveform (column 10, lines 50-51).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute an RF output, such as that suggested by Upton, to the backhaul cable of Scott in order to route a high frequency signal between a radio transmitter and antennas.

Regarding claim 5, Scott discloses the apparatus wherein said length of cabling spans at least a portion of an antenna structure (column 9, lines 20-28).

Regarding claim 6, Scott discloses the apparatus, further including a plurality of amplifiers each located such that said input signals pass through a respective one of said plurality

Art Unit: 2419

of amplifiers prior to passing through said at least N-1 number of modulators (column 3, lines 7-11; column 4, lines 35-40).

Regarding claims 7, 13 and 14, Scott discloses the apparatus wherein said input signals are forward link transmissions and said plurality of amplifiers are high power amplifiers (column 4, lines 35-40; column 6, lines 45-51).

Regarding claims 8 and 15, Scott discloses the apparatus wherein said input signals are reverse link transmissions and said pluralities of amplifiers are low power preamplifiers (column 6, lines 45-51).

Regarding claims 9 and 16, Scott discloses the apparatus wherein said input signals are forward link transmissions and said apparatus further includes a single high power amplifier for amplifying said aggregate signal, said high power amplifier located between said combiner and said length of cabling (column 6, lines 45-51).

Regarding claims 10 and 17, Scott discloses the apparatus wherein said serrodyne modulators are low loss, high power RF frequency translators (column 4, lines 5-31).

Regarding claims 11 and 18, Scott discloses the apparatus wherein said serrodyne modulators operate via a modulation scheme using multi-bit Serrodyne (column 4, lines 12-13; 17-25; column 8, lines 14-29).

Art Unit: 2419

Regarding claim 19, Scott discloses an apparatus for processing N number of modulated, combined, and amplified input signals having a common frequency, said apparatus comprising:

a demodulator for demodulating an amplified aggregate signal consisting of said input signals, said demodulator including (column 6, lines 1-6; column 13, lines 16-25),

N-1 number of serrodyne demodulators (column 5, lines 54-64) for demodulating said aggregate signal (column 11, lines 1-25); and

N number of duplexer filters each corresponding to one of said N number of input signals (column 4, line 65-column 15, line 11);

wherein said demodulators, and said duplexer filters are arranged so as to pass N number of demodulated portions of said aggregate signal to a corresponding output, each of said demodulated portions being substantially identical to one of said N number of input signals (column 4, line 65-column 15, line 11).

Scott, further, discloses that the combined signal output from the summer 151 is transmitted along the backhaul cable 152. The backhaul signal may be made suitable for transmission over a coaxial cable, fiber optic cable, or other type of transmission media using techniques known in the art (column 4, lines 33-43).

Scott does not disclose number of circulators for receiving at least part of aggregate signal and single Radio Frequency output.

Upton, in Figs. 7-9, teaches number of circulators for receiving at least part of aggregate signal (column 10, lines 44-62).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to add a plurality of circulators, such as suggested by Upton, to the system

Art Unit: 2419

of Scott in order to provide a more efficient and increased performance communication system (see summary).

Upton, further, teaches that waveform 206 may be transmitted as either an optical or an RF waveform (column 10, lines 50-51).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute an RF output, such as that suggested by Upton, to the backhaul cable of Scott in order to route a high frequency signal between a radio transmitter and antennas.

### ***Response to Arguments***

3. Applicant's arguments with respect to claims 1-19 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Art Unit: 2419

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SABA TSEGAYE whose telephone number is (571)272-3091.

The examiner can normally be reached on Monday-Friday (7:30-5:00), First Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wing Chan can be reached on (571) 272-7493. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Saba Tsegaye  
Examiner  
Art Unit 2419

/S. T./  
Examiner, Art Unit 2419

/Wing F. Chan/  
Supervisory Patent Examiner, Art Unit 2419  
4/26/09